

PATENT ABSTRACTS OF JAPAN

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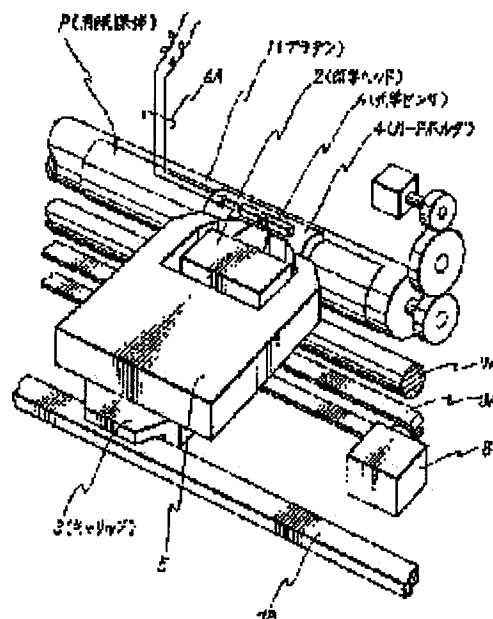
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(54) PRINTER

(57)Abstract:

PURPOSE: To provide a printer for judging whether printing in compliance with an instruction forming host device is good or not, transferring the result thereof to the host device and smoothing the printing operation.

CONSTITUTION: A printer comprises a platen 1 for backing up the printing, a printing head 2 for carrying out the given printing on a paper medium P and a carriage 3 with a card holder 4 mounted and disposed in a manner of encircling a print output face of the printing head 2 and moving reciprocatingly in parallel with the platen 1. An optical sensor 6 for sensing the paper medium P and the platen 1 and outputting identification signals is provided in the card holder 4. A CPU as a computation control section specifying the width and printable data amount of the paper medium P based on the information from the optical sensor 6 and an interface circuit feeding the output of CPU to the host device are provided in the printer.



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CLAIMS

[Claim(s)]

[Claim 1]A platen of a cylindrical shape characterized by comprising the following which holds a paper medium and performs backup of a form feed and printing, A printer which has a printhead which performs predetermined printing operation to said paper medium, and a carriage which carries a card holder allocated as surrounded a printout side of this printhead, and performs reciprocation moving in parallel with said platen.

An operation control part which equips a photo sensor which detects said paper medium and a platen to said card holder, and outputs a recognition signal to it, and specifies width of said paper medium, and data volume which can be printed based on information from this photo sensor.

An interface circuitry which sends an output of this operation control part into an upper device.

[Claim 2]The printer according to claim 1 characterized by putting a predetermined memory side by side to said operation control part, and providing this memory with a function which memorizes and outputs the result of an operation of said operation control part by instructions of said operation control part.

[Claim 3]An information-sending control facility to which said operation control part sends out the form detection information concerned to said upper device promptly when said paper medium is detected, The printer according to claim 1 or 2 having a paper width detection function which carries out continuous control of the paper width detecting operation of said paper medium during execution of this information-sending control facility.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention relates to the printer which started the printer, especially was provided with the paper width detection means.

[0002]

[Description of the Prior Art]By a paper width detection means to detect the paper on the platen in a serial printer, conventionally. Paper width is computed with a various sensor by detecting the end of a paper first, moving a carriage to other ends by making it into a trigger, detecting that movement magnitude, and changing the movement magnitude of this carriage into distance. And printing operation other than a paper can be effectively prevented now from an external command etc. performing discontinuation or line feed of printing operation, etc., when the data volume from an upper device is larger than paper width in this computed result as compared with the data volume of the 1 end of a road from an upper device, and being performed by this.

[0003]

[Problem(s) to be Solved by the Invention]However, if it was in the above-mentioned conventional example, when printing was not actually performed, there was inconvenience that the print range to paper width was not known. For this reason, when printing density was set as intensity and printing operation other than a paper was performed, the inconvenience of damaging a printing pin occasionally had arisen.

[0004]

[Objects of the Invention]This invention improves the inconvenience which this conventional example has, judges the propriety of printing which met especially the instructions from an upper device, and sends out the decision result to an upper device, and it sets it as the purpose to provide the printer which can perform print operation smoothly by this.

[0005]

[Means for Solving the Problem]A platen of a cylindrical shape which holds a paper medium and performs backup of a form feed and printing in this invention, It has a carriage which carries a card holder allocated as surrounded a printhead which performs predetermined printing operation, this printhead, and a head face of this printhead to a paper medium, and performs reciprocation moving in parallel with a platen.

[0006]A photo sensor which detects a paper medium and a platen in a card holder, and outputs a recognition signal to it is equipped.

[0007]And composition of providing an operation control part which specifies width of a paper medium mentioned above based on information from this photo sensor and data volume which can be printed, and an interface circuitry which sends an output of this operation control part into an upper device is taken. It is going to attain the purpose mentioned above by this.

[0008]

[work ---] for Along with the platen 1, the carriage 3 is energized by the carriage drive motor 8, and constant-speed movement is carried out. And low speed running of the carriage 3 is carried out until the photo sensor 6 detects one end of the paper medium P and then detects one end of the paper medium P first. At this time, the memory 11A and CPU11 count time from one end of the paper medium P to an end of another side by making into

a trigger the time of voltage change (from y_1 to y_0) detected by the photo sensor 6.

[0009]This counted time is processed by the memory 11A and CPU11, and paper width length and data volume which can be printed are computed. Paper width length computed by this memory 11A and CPU11 and data volume which can be printed are transmitted to the upper device 50 via CPU11 and the bidirectional interface circuit 12.

[0010]By this, before printing, paper width can be checked, and printing data volume to paper width can also be checked.

[0011]

[Example]Hereafter, one example of this invention is described based on drawing 1 thru/or drawing 5.

[0012]In drawing 1 thru/or drawing 5, the numerals 1 show the platen of a cylindrical shape and the numerals 2 show the printhead which performs predetermined printing operation to the paper medium P. The platen 1 functions as holding the paper medium P and performing backup of a form feed and printing. The numerals 3 show a carriage. This carriage 3 is equipped so that reciprocation moving can be performed in parallel with the platen 1 which carried and mentioned above the card holder 4 and the ink ribbon cartridge 5 which were allocated as surrounded the printout side of the printhead 2. The numerals 5A show an ink ribbon (refer to drawing 2).

[0013]As the card holder 4 is shown in drawing 2 thru/or drawing 3, the comparatively large through hole 4A is formed in a center section, and the tip part of the printhead 2 is arranged in this through hole 4A. The whole surface of the through hole 4A is covered, and the platen 1 side which this through hole 4A mentioned above is equipped with the ribbon protective mask 4B. And printing operation hole 4Ba of the size corresponding to the printout side of the printhead 2 mentioned above is provided in the center section of this ribbon protective mask 4B. In this example, this printing operation hole 4Ba is formed in the rhombus, as shown in drawing 3.

[0014]The photo sensor 6 which detects the paper medium P and the platen 1 in the card holder 4, and outputs a recognition signal to it is equipped. The printhead 2 upper part is equipped with this photo sensor 6. The numerals 4a show the form detection hole for detecting the existence of the paper medium P.

[0015]The numerals 10 show a control-section board. The sensor drivers 10A by which this control-section board 10 controls operation of the photo sensor 6, It has the bidirectional interface circuit 12 which connects the memory 11A put side by side to CPU11 and this CPU11 as an operation control part which specifies the width of the paper medium P, and the data volume which can be printed based on the information from the photo sensor 6, and CPU11 mentioned above and the upper device 50. The numerals 12A show an interface cable (refer to drawing 4).

[0016]The memory 11A put side by side to CPU11 is provided with the function which memorizes and outputs the result of an operation of CPU11 operated and mentioned above by instructions of CPU11.

[0017]CPU11 is provided with the information-sending control facility which sends out the form detection information concerned to an upper device promptly when the paper medium P is detected, and the paper width detection function which continues the paper width detecting operation of the paper medium P during execution of this information-sending control facility.

[0018]Here, the carriage 3 which carries the printhead 2, the card holder 4, and the ink ribbon cartridge 5 is shown, and is supported by the guide shaft 7A and maintenance SUT 7B, and is equipped movable in parallel with the platen 1. This carriage 3 is driven to the career drive motor 8 via the timing belt 8A, and that locomotive faculty is energized.

[0019]The photo sensor 6 sends the detection information on the paper medium P to the control board 10 mentioned above via the cable 6A.

[0020]Next, operation of the above-mentioned example is explained.

[0021]In drawing 5, from A position to D position, the carriage 3 is energized by the career drive motor 8, and constant-speed movement is carried out. In A position, the signal of the photo sensor 6 outputs for example, y_0 [V]. Next, in B position, since there is the paper medium P, voltage serves as y_1 [V]. The state of this y_1 [V] continues to C position. At this time, by making the time of voltage change (from y_1 to y_0) in B position into a trigger, memory 11A and CPU11 considers time t_1 as a start, and counts time t_2 to C position.

[0022] This time is processed by the memory 11A and CPU11, and paper width length and the data volume which can be printed are computed.

[0023] The paper width length and the data volume which can be printed which were computed by this memory 11A and CPU11 are transmitted to the upper device 50 via CPU11, the bidirectional interface circuit 12, and the bidirectional interface cable 12A.

[0024] In the upper device 50, the data concerning predetermined printed information can recognize promptly whether a printout can be carried out to the predetermined paper set up beforehand convenient before a printout, and it For this reason, this sake, It becomes possible [an operator] to reset the printing amount of 1 in all end of a road in the predetermined paper concerned, Therefore, there is an advantage that the printing operation to the outside of the paper currently made when the data volume of the 1 end of a road from an upper device was larger than paper width, and the damage accident of the printing pin accompanying this can be avoided effectively beforehand.

[0025]

[Effect of the Invention] Since according to [since this invention is constituted as mentioned above and functions] this it is set as a serial printer apparatus and the data volume to the paper width length of a paper medium and its paper width which can be printed can be transmitted to a host computer by a bidirectional interface circuit, By the upper device side, before starting printing to a paper medium, can recognize the information about paper width length, and This sake, For example, things can be carried out and the outstanding printer which is not in the former that the printing operation to the outside of the paper which takes the treatment of regulating beforehand the amount of printing data of 1 end of a road, and which had been conventionally produced in this point, the damage accident of the printing pin accompanying this, etc. are effectively avoidable beforehand can be provided.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is the perspective view abridged in part showing one example of this invention.

[Drawing 2]It is drawing of longitudinal section showing the example of the card holder portion indicated in drawing 1.

[Drawing 3]It is the right side view in which drawing 2 carried out the partial abbreviation.

[Drawing 4]It is a block diagram showing the control system of the example shown in drawing 1.

[Drawing 5]It is an explanatory view showing operation of the example shown in drawing 1.

[Description of Notations]

- 1 Platen
- 2 Printhead
- 3 Carriage
- 4 Card holder
- 6 Photo sensor
- 11 CPU as an operation control part
- 11A Memory
- 12 Bidirectional interface circuit
- 50 Upper device
- P Paper medium

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